

City of Richmond Traffic Engineering
Fact Sheet - Answers To Commonly Asked Questions

When Should Traffic Signals Be Installed?

Background

Traffic signals are defined as power-operated traffic control devices, which alternately assign the right of way at intersecting streets. A properly designed, operated, and maintained traffic signal can be a very valuable device for the control of vehicle and pedestrian traffic because it exerts a significant influence on traffic flow. Consequently, it is important that the selection and use of such an important traffic control device be preceded by a thorough engineering study of both roadway and traffic conditions.

Traffic engineering study required

To ensure uniformity in traffic signal installations across the United States, the Federal Highway Administration has published the *Manual on Uniform Traffic Control Devices, (MUTCD)*. Virginia has adopted this manual as a guideline for determining traffic signal installations.

Traffic, accident and roadway data must be collected

Traffic, accident and physical roadway data is collected at a location and compared against the standards contained in the MUTCD. For instance, one condition for traffic signal consideration analyzes the total volume of intersecting traffic. It compares the intersection volumes for an average weekday to the accepted criteria. Should the volumes on the major street and on the minor street, when compared for the same hours, meet or exceed those listed in the MUTCD then consideration can be given to installing a traffic signal.

Certain types of crashes that occur at intersections combined with traffic volumes can also indicate the need for possible traffic signal control. An unusually high incidence of right angle collisions coupled with the appropriate volume requirements, may indicate the need for a traffic signal. It is important to remember that while properly installed and maintained traffic signals can have a reduction in the number of “angle” type collisions, “rear end” type collisions can increase since the major street traffic will now have to frequently stop for the minor street traffic.

Engineers must answer many questions

Essentially, in deciding whether a traffic signal is needed and will fulfill its intended purpose and not be a liability, engineers must evaluate the following criteria:

- Does the number of vehicles on intersecting streets create confusion or congestion?
- Is the traffic on the main street so heavy that drivers on the side streets will try to cross when it is unsafe?
- Will the installation of a signal allow for continuous, uniform traffic flow with a minimum number of vehicle stops?
- Does an intersection’s accident history indicate that a signal will reduce the possibility of a collision?

Summary

A traffic signal that decreases accidents and improves the flow of traffic is an asset. However traffic signals are not the “cure-all” as many people perceive them to be. Research has shown that they can, in some instances, do more harm than good. For these reasons traffic engineers must be certain that the benefits of installing a traffic signal will outweigh the inherent adverse characteristics of these devices.